

Amendments to the Drawings:

Enclosed are copies of the original drawings including Figs. 1, 2, 4, and 5 as filed in the international application, of which the present application is a national phase application.

REMARKS/ARGUMENTS

Claims 39-76 are pending in this application, with claims 39 and 67 being the only independent claims. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Claim Amendments

Claim 39 is amended to clarify that the present invention uses diffuse reflection and not true reflection. Support for these amendments is in original claim 39, which recites that the UV sensor receives UV radiation that has been diffusely reflected, and in paragraph [0063] of the application as originally filed.

Claim 67 is amended to recite based on a degree of diffuse reflection of UV radiation in the layer of skin, the depth of the determination being adjusted for a determination in a specific skin layer. Support for this amendment is found in paragraph [0073] of the application as originally filed.

Dependent claim 44 is amended to recite “a reflection of a ray on the optical axes of the UV emitter and the UV sensor occurs at a depth of penetration sufficient to measure diffuse reflection in a layer of skin”. Support for this limitation is found in paragraph [0031] and [0032] of the application as originally filed.

Dependent claim 56 is amended to implement an editorial correction.

Dependent claim 68 is amended to recite “UV radiation having a wavelength of approximately 345 nm to 355 nm”. Support for this limitation is found in claim 42 and at paragraph [0029] of the specification as originally filed.

Drawing Objections

In the Office Action mailed June 14, 2007, the drawings are objected to because the Examiner states that Figs. 1-2 and 4-5 are missing from the application. These Figures are part of the original international application and were presented as part of the published international application filed with the application. A copy of these drawings is filed herewith.

Rejection of the Claims over Prior Art

Claims 39-44, 49-54 and 65 stand rejected under 35 U.S.C. §102(b) as being anticipated by US Patent No. 6,348,694 (Gershteyn).

Claims 45-48 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gershteyn.

Claims 55-59 and 64 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gershteyn in view of US Patent No. 5,807,261 (Benaron).

Claim 60 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gershteyn in view of US Patent No. 6,736,832 (Lenderink).

Claim 61 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gershteyn in view of US Patent Application Publication No. 2002/0052562 (Lipman).

Claims 62 and 63 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gershteyn in view of US Patent No. 5,107,123 (Shi).

Claim 66 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gershteyn in view of US Patent No. 4,882,598 (Wulf).

Claims 67, 68, 75 and 76 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wulf.

Claim 69 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wulf in view of US Patent Application Publication No. 2003/0045916 (Anderson).

Claim 70 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wulf in view of US Patent No. 5,640,957 (Kaminski).

Claims 71 and 72 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wulf in view of Kaminski, and further in view of Gershteyn.

Claims 73, 74 and 76 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wulf in view of Gershteyn.

Before discussing the cited prior art and the Examiner's rejections of the claims in view of that art, a brief description of the subject matter described in the present application is deemed appropriate to facilitate understanding of the arguments for patentability. The description is not meant to argue unclaimed subject matter.

The present invention relates to measuring devices and a method for determining the allowable UV exposure time and/or UV radiation dose of human skin. According to the invention, allowable exposure time and/or radiation dose is based on UV radiation for which the reflection that occurs in and/or on the skin is not true reflection but rather diffuse reflection (see paragraphs [0065] - [0066] in the specification as filed). As shown in Fig. 2 of the present application, an incident ray 1 penetrates the skin 2 and is radially scattered and is partly diffusely reflected (as indicated by the rays of light 3) and partly absorbed (as indicated by the rays 4) (see paragraph [0066]). The density and/or thickness of the melanin granules and/or density and/or thickness of the layer of melanosomes embedded in keratinocytes can be derived from the rays 3 that represent the diffuse reflection to obtain information about the effectiveness of an area of hyperkeratosis, on the basis of which a threshold dose can be determined (see paragraph [0067]).

Independent claim 39

Independent claims 39 is amended to clarify that the invention is directed to “determining UV radiation absorption of the skin based on the UV radiation emitted on the skin by the UV emitter and the diffusely reflected UV radiation received by the UV sensor”.

Gershteyn fails to disclose, teach or suggest this limitation. Gershteyn discloses a method and apparatus for determining an ability of skin to withstand exposure to harmful radiation, and a safe exposure time of the skin. According to Gershteyn, a first radiation 36 and a second radiation 38 are incident to a region of skin 24 (see Fig. 1A and col. 7, lines 3-5 of Gershteyn). The first radiation 36 has a wavelength within an absorption spectrum of sunscreen 26 on the skin and the second radiation 38 has a wavelength outside the absorption spectrum of the sunscreen (col. 7, lines 33-39) to determine an effectiveness of the sunscreen (col. 7, lines 50-57). In a specific example, the first radiation is in the range 290nm-320nm (col. 11, lines 40-43) and the second radiation is in the range 400nm-760nm (col. 12, lines 10-12). Gershteyn also specifically discloses that the reflected second radiation indicates a darkness of the skin 24 which is indicative of how susceptible the skin is to damage by harmful radiation (col. 7, lines 27-32). Since Gershteyn teaches that only the second radiation is used to determine an indication of how susceptible the skin is to damage by harmful radiation, and that the second radiation is in the visible light range of 400nm-760nm, Gershteyn fails to disclose “determining UV radiation absorption of the skin based on the UV radiation emitted on the skin by the UV emitter and the diffusely reflected UV radiation received by the UV sensor”, as expressly recited in independent claim 39.

Accordingly, the rejection of independent claim 39 as anticipated by Gershteyn should now be withdrawn.

Independent claim 67

Independent claim 67 is amended to clarify that the invention is directed to “determining absorption of erythemally-effective UV radiation in a layer of the skin that has developed hyperkeratosis based on a degree of diffuse reflection of the UV radiation in the layer of skin, the depth of the determination being adjusted for a determination in a specific skin layer”.

In contrast, Wulf specifically discloses that an individual’s ability to stand exposure to ultraviolet radiation prior to causing a skin reaction corresponds to the individual’s coefficient of skin surface reflection to electromagnetic radiation (see col. 2, lines 39-44 of Wulf). Since Wulf discloses a skin *surface* reflection, there is no teaching or suggestion for “the depth of the determination being adjusted for a determination in a specific skin layer”.

Accordingly, amendment claim 67 is allowable over Wulf.

Dependent claims

Dependent claims 40-66 and 68-76 are allowable for at least the same reasons as are independent claims 39 and 67.

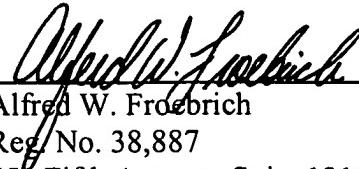
Dependent claims 47 and 48 each recite that the device can be adjusted to vary the depth of penetration. The Examiner states that this is obvious in view of Gershteyn. However, Gershteyn only discloses surface reflection and therefore fails to disclose, teach or suggest any reason to adjust a depth of penetration.

The application is now deemed to be in condition for allowance and notice to that effect is solicited.

Should the Examiner have any comments, questions, suggestions, or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

Respectfully submitted,
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